

## ABSTRACT

The method by the invention in which a molten salt is held in a reactor cell 1 to perform electrolysis in the molten salt of the reactor cell, the molten salt containing  $\text{CaCl}_2$  while Ca being dissolved in the molten salt, and  
5 Ti or Ti alloys are generated in the molten salt by supplying a metallic chloride containing  $\text{TiCl}_4$  into the molten salt such that the metallic chloride containing  $\text{TiCl}_4$  is caused to react with Ca generated on a cathode electrode side by the electrolysis, makes it possible to produce the high-purity Ti metals or Ti alloy. Furthermore, the reactor cell 1 includes a membrane 4 which partitions an  
10 inside of the reactor cell into a side of an anode electrode 2 and a side of a cathode electrode 3, and the membrane 4 blocks the movement of Ca generated on the cathode electrode side in the reactor cell toward the anode electrode side while permitting the molten salt to flow in the reactor cell, which allows a back reaction by Ca to be effectively suppressed. When an electroconductive porous  
15 material is used as a cathode electrode, productivity can further be improved.